

WHAT IS CLAIMED IS:

1. A method of providing software developers with a stable platform on which a telecommunications application can be developed for a variety of hardware systems, the method comprising:

- 5                   providing an interface so that a user may log in;  
                  accessing an account associated with the user;  
                  automatically detecting hardware resources resident on a local system  
                  that are related to telecommunications;  
                  pooling the detected hardware resources into related virtual pools;  
10                  establishing contact with remote systems and obtaining a status of the  
                  resources available on the remote systems;  
                  detecting one or more telecommunications applications associated with  
                  the user;  
                  allocating the available local resources among telecommunications  
15                  applications that are associated with the user;  
                  providing an application program interface (API) to a  
                  telecommunications applications that enables the telecommunications  
                  application to communicate with underlying hardware and remote systems,  
                  where the API further automatically compensates for a change in the underlying  
20                  hardware such that the telecommunications application continues to  
                  communicate with the underlying hardware without change to the  
                  telecommunications application;  
                  re-allocating available local resources in response to an imbalance  
                  between telecommunications-related resources allocated and  
25                  telecommunications-related resources consumed; and  
                  requesting and receiving resources from a remote system in response to  
                  an inadequacy in locally available resources.

2. The method as defined in Claim 1, further comprising detecting the  
presence and configuration of underlying telecommunications hardware with hardware  
30                  drivers provided by vendors of the respective hardware.

3. The method as defined in Claim 1, further comprising activating a telecommunications application through a multi-thread capable attach module, which attaches to at least one telecommunications application to report status of transactions.

4. The method as defined in Claim 1, further comprising detecting a change in the underlying hardware and reconfiguring the virtual pools in accordance with the changed hardware.

5. The method as defined in Claim 1, further comprising:  
detecting an error in a local resource;  
alerting a telecommunications application associated with the local resource;  
retrieving a repair rule from a database, where the repair rule corresponds to the error; and  
reinitializing the local resource in accordance with the repair rule.

6. The method as defined in Claim 1, further comprising:  
detecting that an error in a local resource;  
alerting a telecommunications application associated with the local resource;  
alerting a system administrator of the error;  
monitoring steps taken by the system administrator to correct the error;  
storing the steps in a database as a repair rule; and  
retrieving the repair rule and correcting the error in the local resource in response to a subsequent detection of the error.

7. The method as defined in Claim 1, further comprising:  
detecting an error in a local resource;  
alerting a telecommunications application associated with the local resource;  
retrieving a repair rule from a database, where the repair rule corresponds to the error;  
comparing an initialization allocation from the repair rule to a present allocation of the resource; and

allocating more than the initialization allocation from the repair rule when the present allocation is at least as great as the initialization allocation.

8. The method as defined in Claim 1, further comprising:

monitoring and tracking the usage of local resources by a plurality of telecommunications applications;

associating the resources consumed by user; and  
computing a bill based on the resources consumed.

9. The method as defined in Claim 1, further comprising:

monitoring and tracking the usage of local resources by a plurality of telecommunications applications;

associating the resources consumed by user; and  
restricting further access to at least one telecommunications application in response to the resources consumed exceeding a predetermined amount.

10. The method as defined in Claim 1, further comprising:

logging events that indicate a shortage of resources;  
providing an alert to increase a capacity associated with at least one resource, where the events logged indicate a lack of capacity associated with the resource.

11. The method as defined in Claim 1, wherein the contact with the remote systems is established via the Internet.

12. A telecommunications operating system used to manage resources for telecommunication application programs, where the telecommunications operating system works in conjunction with a general operating system, the telecommunications operating system comprising:

a system integration layer that communicates with underlying hardware and the general operating system, where the system integration layer further arranges available hardware resources into virtual resource pools;

a telecommunications service application layer that includes application program interfaces (APIs), which provide protocols and routines that allow a higher-level application to communicate with underlying hardware with a program interface so that the higher-level application is portable from one

hardware system to another, where the telecommunications service application layer further includes a messaging protocol that translates and formats data to and from the APIs to a format compatible with the underlying hardware; and

a telecommunications operating system layer that coordinates data transfers to and from the system integration layer and the telecommunications service application layer, the telecommunications operating system layer configured to monitor available resources on the underlying local hardware and on remote systems, the telecommunications operating system layer further configured to allocate available resources among detected local telecommunications applications and configured to reallocate the resources in response to changes in resource demands.

13. The telecommunications operating system as defined in Claim 12, wherein the system integration layer further includes a user authentication control configured to receive a user ID and a password to authenticate a first user account.

14. The telecommunications operating system as defined in Claim 12, wherein the system integration layer further includes a user authentication control configured to receive an encrypted user ID and an encrypted password to authenticate a second user account.

15. The telecommunications operating system as defined in Claim 12, wherein the system integration layer is further configured to detect a presence and a configuration of a telecommunications related hardware by using a hardware driver associated with the hardware.

16. The telecommunications operating system as defined in Claim 12, wherein the virtual resource pools comprise a SS7 signaling link pool, a digital channel pool, an analog channel pool, an ISDN channel pool, a voice channel pool, and a fax channel pool.

17. The telecommunications operating system as defined in Claim 12, wherein the telecommunications service application layer further includes resource share definitions configured to define how a resource is allocated among available telecommunications applications.

18. The telecommunications operating system as defined in Claim 12, wherein the APIs of the telecommunications service application layer are further configured to provide outbound calling, call bridging, and call forwarding functions.

5 19. The telecommunications operating system as defined in Claim 12, wherein the APIs of the telecommunications service application layer are further configured to provide reproduction of voice files.

20. The telecommunications operating system as defined in Claim 12, wherein the APIs of the telecommunications service application layer are further configured to receive fax messages functions.

10 21. The telecommunications operating system as defined in Claim 12, wherein the APIs of the telecommunications service application layer are further configured to return an allocation of a pool when a resource is no longer used by a telecommunications application.

15 22. The telecommunications operating system as defined in Claim 12, wherein the telecommunications service application layer further includes at least one higher-level application module adapted to communicate with the APIs to provide a telecommunications application.

20 23. The telecommunications operating system as defined in Claim 12, wherein the telecommunications operating system layer is further configured to receive data from a remote telecommunications application in a data packet, where the data packet includes a header that designates a type of resource pool and an amount of resources from the resource pool.

24. The telecommunications operating system as defined in Claim 23, wherein the data packets are transmitted over the Internet.

25 25. The telecommunications operating system as defined in Claim 12, wherein the telecommunications operating system layer further includes a Call Detailed Record generation module configured to monitor and to maintain a record of transactions that use local resources.

30 26. The telecommunications operating system as defined in Claim 12, wherein the telecommunications operating system layer is further configured:

to detect that a resource pool is unable to supply a desired amount of resources for a telecommunications application;

to receive a status of available resources on remote systems; and

to share resources with a remote system to make the remote system resource available to the telecommunications application.

27. The telecommunications operating system as defined in Claim 12, wherein the telecommunications operating system layer further includes a local channel resource management module that is configured to detect when a resource within a pool in use by a telecommunications application has run low on available resources, and to switch to the telecommunications application to use another resource within the pool.

28. A system adapted to provide a platform on which telecommunications applications can be layered, the system comprising:

means for providing an interface so that a user may log in;

means for accessing an account associated with the user;

means for automatically detecting hardware resources resident on a local system that are related to telecommunications;

means for pooling the detected hardware resources into related virtual pools;

means for establishing contact with remote systems and obtaining a status of the resources available on the remote systems;

means for detecting one or more telecommunications applications associated with the user;

means for allocating the available local resources among telecommunications applications that are associated with the user;

means for providing an application program interface (API) to a telecommunications applications that enables the telecommunications application to communicate with underlying hardware and remote systems, where the API further automatically compensates for a change in the underlying hardware such that the telecommunications application continues to communicate with the underlying hardware without change to the telecommunications application;

